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An Introduction to Practical Mathematics. By F. M. SAXELBY. London and
New York: Longmans, Green & Co., 1908. Pp. vi+220.

This book is intended especially for students in evening schools of engineer-
ing and applied sciences. It includes, in the order given, chapters on contracted
methods of computation, the use of algebraic symbols in formulas, mensuration
of regular figures, the fundamental operations with algebraic expressions, alge-
braic factors and fractions, simple equations, the theory of exponents and
logarithms, plotting of functions, graphical solution of equations, ratio and varia-
tion, trigonometric ratios, solution of right triangles, mensuration of irregular
figures, and rate of increase of one variable in terms of another. Appended
are several Board of Education examination papers, answers to examples, a table
of constants, and a table of logarithms.

Although "practical," the book is not a collection of rules and typical
examples. The range of topics treated in 190 pages is sufficient indication of
its compactness. There is practically no repetition, and each new principle is
promptly illustrated by practical problems. The concise explanations of prin-
ciples are admirably clear and are calculated to stimulate the student's interest in
the reasons underlying the processes illustrated. The book seems well adapted to
its purpose. It may be used to good advantage also by high-school mathematics
teachers as a source of practical problems and of suggestive methods of pre-
senting certain topics.

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Arithmetical Abilities, and Some Factors Determining Them. By CLIFF
WINFIELD STONE. New York: Published by Teachers College, Columbia
University, 1908. Pp. 101.

In part, this study is a continuation of the earlier Teachers College studies
on the correlation of school abilities. The question is, to what extent excel-
lence in one of the four fundamental processes, addition, subtraction, multipli-
cation, or division of integers, implies excellence in the other three, and to what
extent excellence in all four implies excellence in arithmetical reasoning. The
remainder of the investigation deals with the relation of the time expended
upon arithmetic to the quality of the results. The author's method consisted in
visiting personally twenty-six cities and towns, equably distributed over the East
and Middle West, and giving a set of questions to the high-sixth-grade classes
of certain schools, selected by the various superintendents. The schools chosen
were supposed to be those in which the approved course of study had been best
carried out for the past six years. The papers were graded by the author.
Twelve minutes were allowed on the fundamentals, and fifteen minutes on the
reasoning test. Each part contained more questions than could be done in the
time allowed, and hence the grades represented speed as well as accuracy. In
many respects this investigation is similar to the one made some years ago by
Dr. J. M. Rice and published in the *Forum*.

As to the correlation of arithmetical abilities, it was found that excellence

in one of the four fundamental processes does imply a roughly similar degree of excellence in the others. The correlation was not so high between the fundamentals and reasoning; still, when three cities are omitted which avowedly laid the main stress on the fundamentals, the correlation is moderately large.

On the second head—the relation of time expenditure to results—there is, on the whole, little or no correspondence, except in the case of the four processes where home study is figured in. By time expenditure is meant the time spent by the six lower grades in the years during which the pupils tested presumably had been passing through them. The results were computed with inclusion of study periods in school, and both with and without inclusion of home study.

While there are several sources of error in obtaining the above result, still the variations are too great to be accounted for by them. The school system at one extreme of the time-scale spent 7 per cent. of its time on arithmetic, the one at the other extreme, 22 per cent. The first-mentioned was third poorest, the second twelfth from the poorest out of twenty-six systems. *The two systems which made the best and the poorest showing spent respectively 14 and 12 per cent. of their total school time on arithmetic.*

The author attributes this lack of correspondence to a number of causes, among them, (1) wasting of time during the writing of the tests by unnecessarily long verbal analyses of the problems, and (2) wasting of time during the test by counting. These causes indicate defects in arithmetical instruction.

Other conclusions were (1) concentrating the arithmetic of the first six grades in the third to sixth grades produces at least no better results than distributing it over the six grades; (2) home study helps; (3) excellent courses of study are only an opportunity for excellent work. On the whole, it is a valuable investigation for principals and superintendents, not too technical for the beginner in statistical methods. Its chief aim is to standardize elementary-school arithmetic.

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School Algebra, Part II. By W. E. PATERSON. Oxford: The Clarendon Press, 1908. Pp. lxvii+604. 3s.

There is on the part of many teachers a feeling that the content of the course usually given in college algebra is in need of revision. From the point of view of the average student this course seems to consist of a miscellaneous collection of subjects which have vital relations neither with one another nor with anything else he has studied except, possibly, elementary algebra. The latest college algebras by American authors remedy this in part, but they seem to be written exclusively for students of pure mathematics. This algebra by Professor Paterson, however, comes quite close to meeting the needs of the technical schools, and covers the ground of the usual course in college algebra.

While the necessity of rigorous mathematical treatment seems to be kept in view, the formal proofs are not incomprehensible to the average student. If there is a lack of rigor in some cases, the simple, common-sense explanations carry conviction of the truth, and give the student a grasp of principles which he can use in solving problems. Most of the various algebraic operations and